



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/929,765	08/14/2001	Chih Chin Liao	56370	9374

7590 07/30/2002  
EDWARDS & ANGELL, LLP  
101 FEDERAL STREET  
BOSTON, MA 02110

EXAMINER

WARREN, MATTHEW E

ART UNIT	PAPER NUMBER
----------	--------------

2815

DATE MAILED: 07/30/2002

7

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/929,765

Applicant(s)

LIAO

Examiner

Matthew E. Warren

Art Unit

2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 09 May 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) 1-5 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 6-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

This Office Action is in response to the Election filed on May 9, 2002.

#### ***Election/Restrictions***

Applicant's election with traverse of Group I, claims 6-10 in Paper No. 5 is acknowledged. The traversal is on the ground(s) that the Examiner has failed to demonstrate that the method can be used to make another and materially different product. This is not found persuasive because the Examiner believes that the claimed method can be used to make a different product. The claimed method involves "connecting" a semiconductor chip to an array of solder balls, thus forming a BGA semiconductor package. The method of "connecting" as cited by the Examiner connects a capacitor to a source region, thus forming a DRAM capacitor. Although both inventions include semiconductor devices, a packaged device is quite different from a bare semiconductor DRAM circuit. Furthermore, the two inventions are classified in two separate subclasses. An examiner who specializes in one subclass would find it difficult to conduct a thorough search of another subclass. A burden is placed on the examiner in such a situation. The requirement is still deemed proper and is therefore made FINAL.

Claims 1-5 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 5.

***Specification***

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 10 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The specification does not adequately explain what a zero resistance chip resistor is. If a material has zero resistance, then it does not constitute what is a resistor.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 10 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "zero-resistance resistor chip resistor" is confusing. If the material has a zero resistance, then it does not constitute what is a resistor.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Applicant's Prior Art Figures 3 and 4 (APAF) in view of Abrams (US 3,560,256).

The APAF 3 and 4 shows a BGA package a substrate<sup>10</sup> having a front and back side, a chip 20 mounted on the front side of the substrate, the chip having an array of bond pads 30B, an array of solder balls 40A on the back side of the substrate, and an array of bond fingers 60B beside the chip and electrically connected to the bond pads of that chip. An array of electrically conductive vias (72 & 74) penetrate from the front to the back side of the substrate and connect to the solder balls. The package also comprises a plurality of continuous electrically-conductive traces (70A-70D) for connecting a first subgroup of the bond fingers to corresponding ones of the vias. The continuous traces including at least one trace interposed between a second subgroup of the bond fingers and their corresponding vias. The APAF shows all of the elements of the claims except the electrically conductive bridge. Abrams shows (fig. 1) a circuit in which crossover or conductive bridges are used to increase the packing density of the circuit (col. 2, lines 14-26). The electrically conductive bridge 26 spans in an overhead manner across interposing traces (22c & 22d) and connect one end of a trace 22b to the end of another trace 22a. The bridge/crossover is made of gold wires or includes a

resistor (col. 4, lines 3-6, & 25-31). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the APAF by employing conductive bridge structures that cross over circuit traces as taught by Abrams to increase the packing density of the circuit.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Akiyama et al. (US 3,801,388), De Givry (US 5,473, 196), Young (US 5,717,547), and Yagi (US 6,013,573) also show integrated circuits having conductive bridge structures.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew E. Warren whose telephone number is (703) 305-0760. The examiner can normally be reached on Mon-Thurs, and alternating Fri, 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (703) 308-1690. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3432 for regular communications and (703) 308-7722 for After Final communications.

Application/Control Number: 09/929,765  
Art Unit: 2815

Page 6

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

MEW

July 27, 2002

A handwritten signature in black ink, appearing to read 'Eddie Lee', with a large, sweeping initial 'E'.

EDDIE LEE  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800